RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/768,886A
Source: IFW16
Date Processed by STIC: 6/2/06

ENTERED

IFW16

RAW SEQUENCE LISTING DATE: 06/02/2006
PATENT APPLICATION: **US/10/768,886A** TIME: 09:48:18

Input Set : **A:\MAPK5 (Supp).txt**
Output Set: **N:\CRF4\06022006\J768886A.raw**

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      3 <110> APPLICANT: Board of Trustees for University of Arkansas
      5 <120> TITLE OF INVENTION: Mitogen-Activated Protein Kinase and Method of Use to
Enhance
      6       Biotic and Abiotic Stress Tolerance in Plants
      8 <130> FILE REFERENCE: UAF-03-14
C--> 10 <140> CURRENT APPLICATION NUMBER: US/10/768,886A
     11 <141> CURRENT FILING DATE: 2004-01-31
     13 <160> NUMBER OF SEQ ID NOS: 10
     15 <170> SOFTWARE: PatentIn version 3.2
     17 <210> SEQ ID NO: 1
     18 <211> LENGTH: 1396
     19 <212> TYPE: DNA
     20 <213> ORGANISM: Oryza sativa
     22 <400> SEQUENCE: 1
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     25 aggaggaggg attagggatg gacggggcgc cggtggcgga gttcaggccg acgatgacgc    120
     27 acggcggccg gtacctgctc tacgacatct tcgggaacaa gttcgaggtg acgaacaagt    180
     29 accagccgcc catcatgccc attggccgcg gcgcctacgg gatcgtctgc tccgtgatga    240
     31 actttgagac gagggagatg gtggcgataa agaagatcgc caacgcgttc aacaacgaca    300
     33 tggacgccaa gcgcacgctc cgggagatca agctcctcag gcacctcgac cacgagaaca    360
     35 tcataggcat cagggatgtg atcccgccgc cgatccctca ggcgttcaac gacgtctaca    420
     37 tcgccacgga gctcatggac accgacctcc atcacatcat ccgctccaac caagaactgt    480
     39 cagaagagca ctgccagtat ttcctgtacc agatcctgcg ggggctcaag tacatccact    540
     41 cggcgaacgt gatccaccgc gacctgaagc cgagcaacct gctgctgaac gccaactgcg    600
     43 acctcaagat ctgcgacttc gggctggcgc ggccgtcgtc ggagagcgac atgatgacgg    660
     45 agtacgtggt cacccggtgg taccgcgcgc cggagctgct gctcaactcc accgactact    720
     47 ccgccgccat cgacgtctgg tccgtcggct gcatcttcat ggagctcatc aaccgccagc    780
     49 cgctcttccc cggcagggac cacatgcacc agatgcgcct catcaccgag gtgatcggga    840
     51 cgccgacgga cgacgagctg gggttcatac ggaacgagga cgcgaggaag tacatgaggc    900
     53 acctgccgca gtacccgcgc cggacgttcg cgagcatgtt cccgcgggtg cagcccgccg    960
     55 cgctcgacct catcgagagg atgctcacct tcaacccgct gcagagaatc acagttgagg   1020
     57 aggcgctcga tcatccttac ctagagagat tgcacgacat cgccgatgag cccatctgcc   1080
     59 tggagccctt ctccttcgac ttcgagcaga aggctctaaa cgaggaccaa atgaagcagc   1140
     61 tgatcttcaa cgaagcgatc gagatgaacc caaacatccg gtactagatt gaatcaccat   1200
     63 ggaaatgaga tcccgtctat acctgctttg tacatatgat caagattgag agccgggtag   1260
     65 actgaacatt gcatttgttt gtttgttgat gttcgaaacc cacattctct gcaagttgtg   1320
     67 gctgctttgt atgatatatg gtactatgtt cgaataaaag ggtttggaac tttggattaa   1380
     69 aaaaaaaaaa aaaaaa                                                  1396
     72 <210> SEQ ID NO: 2
     73 <211> LENGTH: 368
     74 <212> TYPE: PRT
     75 <213> ORGANISM: Oryza sativa
     77 <400> SEQUENCE: 2
     79 Met Asp Gly Ala Pro Val Ala Glu Phe Arg Pro Thr Met Thr His Gly
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80 1               5                   10                  15
83 Gly Arg Tyr Leu Leu Tyr Asp Ile Phe Gly Asn Lys Phe Glu Val Thr
84             20                  25                  30
87 Asn Lys Tyr Gln Pro Pro Ile Met Pro Ile Gly Arg Gly Ala Tyr Gly
88         35                  40                  45
91 Ile Val Cys Ser Val Met Asn Phe Glu Thr Arg Glu Met Val Ala Ile
92     50                  55                  60
95 Lys Lys Ile Ala Asn Ala Phe Asn Asn Asp Met Asp Ala Lys Arg Thr
96 65                  70                  75                  80
99 Leu Arg Glu Ile Lys Leu Leu Arg His Leu Asp His Glu Asn Ile Ile
100                 85                  90                  95
103 Gly Ile Arg Asp Val Ile Pro Pro Pro Ile Pro Gln Ala Phe Asn Asp
104             100                 105                 110
107 Val Tyr Ile Ala Thr Glu Leu Met Asp Thr Asp Leu His His Ile Ile
108         115                 120                 125
111 Arg Ser Asn Gln Glu Leu Ser Glu Glu His Cys Gln Tyr Phe Leu Tyr
112     130                 135                 140
115 Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Ile His
116 145                 150                 155                 160
119 Arg Asp Leu Lys Pro Ser Asn Leu Leu Leu Asn Ala Asn Cys Asp Leu
120                 165                 170                 175
123 Lys Ile Cys Asp Phe Gly Leu Ala Arg Pro Ser Ser Glu Ser Asp Met
124             180                 185                 190
127 Met Thr Glu Tyr Val Val Thr Arg Trp Tyr Arg Ala Pro Glu Leu Leu
128         195                 200                 205
131 Leu Asn Ser Thr Asp Tyr Ser Ala Ala Asp Val Trp Ser Val Gly Cys
132     210                 215                 220
135 Ile Phe Met Glu Leu Ile Asn Arg Gln Pro Leu Phe Pro Gly Arg Asp
136 225                 230                 235                 240
139 His Met His Gln Met Arg Leu Ile Thr Glu Val Ile Gly Thr Pro Thr
140                 245                 250                 255
143 Asp Asp Glu Leu Gly Phe Ile Arg Asn Glu Asp Ala Arg Lys Tyr Met
144             260                 265                 270
147 Arg His Leu Pro Gln Tyr Pro Arg Arg Thr Phe Ala Ser Met Phe Pro
148         275                 280                 285
151 Arg Val Gln Pro Ala Ala Leu Asp Leu Ile Glu Arg Met Leu Thr Phe
152     290                 295                 300
155 Asn Pro Leu Gln Arg Ile Thr Val Glu Glu Ala Leu Asp His Pro Tyr
156 305                 310                 315                 320
159 Leu Glu Arg Leu His Asp Ile Ala Asp Glu Pro Ile Cys Leu Glu Pro
160                 325                 330                 335
163 Phe Ser Phe Asp Phe Glu Gln Lys Ala Leu Asn Glu Asp Gln Met Lys
164             340                 345                 350
167 Gln Leu Ile Phe Asn Glu Ala Ile Glu Met Asn Pro Asn Ile Arg Tyr
168         355                 360                 365
171 <210> SEQ ID NO: 3
172 <211> LENGTH: 1084
173 <212> TYPE: DNA
174 <213> ORGANISM: Oryza sativa
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Input Set : **A:\MAPK5 (Supp).txt**
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176 <400> SEQUENCE: 3
177 agagagtcag ataaggtcgt taattaggtt ggtcaattcg gctgcttgcg gcgagagaag 60
179 aggaggaggg attagggatg gacggggcgc cggtggcgga gttcaggccg acgatgacgc 120
181 acggcggccg gtacctgctc tacgacatct tcgggaacaa gttcgaggtg acgaacaagt 180
183 accagccgcc catcatgccc attggccgcg gcgcctacgg gatcgtctgc tccgtgatga 240
185 actttgagac gagggagatg gtggcgataa agaagatcgc caactgcgac ctcaagatct 300
187 gcgacttcgg gctggcgcgg ccgtcgtccg agaagcgacat gatgacggag tacgtggtca 360
189 cccggtggta ccgcgcgccg gagctgctgc tcaactccac cgactactcc gccgccatcg 420
191 acgtctggtc cgtcggctgc atcttcatgg agctcatcaa ccgccagccg ctcttccccg 480
193 gcagggacca catgcaccag atgcgcctca tcaccgaggt gatcgggacg ccgacggacg 540
195 acgagctggg gttcatacgg aacgaggacg cgaggaagta catgaggcac ctgccgcagt 600
197 acccgcgccg gacgttcgcg agcatgttcc cgcgggtgca gcccgccgcg ctcgacctca 660
199 tcgagaggat gctcaccttc aacccgctgc agagaatcac agttgaggag gcgctcgatc 720
201 atccttacct agagagattg cacgacatcg ccgatgagcc catctgcctg gagcccttct 780
203 ccttcgactt cgagcagaag gctctaaacg aggaccaaat gaagcagctg atcttcaacg 840
205 aagcgatcga gatgaaccca aacatccggt actagattga atcaccatgg aaatgagatc 900
207 ccgtctatac ctgctttgta catatgatca agattgagag ccgggtagac tgaacattgc 960
209 atttgtttgt ttgttgatgt tcgaaaccca cattctctgc aagttgtggc tgctttgtat 1020
211 gatatatggt actatgttcg aataaaaggg tttggaactt tggattaaaa aaaaaaaaaa 1080
213 aaaa 1084
216 <210> SEQ ID NO: 4
217 <211> LENGTH: 266
218 <212> TYPE: PRT
219 <213> ORGANISM: Oryza sativa
221 <400> SEQUENCE: 4
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224 1 5 10 15
227 Gly Gly Arg Tyr Leu Leu Tyr Asp Ile Phe Gly Asn Lys Phe Glu Val
228 20 25 30
231 Thr Asn Lys Tyr Gln Pro Pro Ile Met Pro Ile Gly Arg Gly Ala Tyr
232 35 40 45
235 Gly Ile Val Cys Ser Val Met Asn Phe Glu Thr Arg Glu Met Val Ala
236 50 55 60
239 Ile Lys Lys Ile Ala Asn Cys Asp Leu Lys Ile Cys Asp Phe Gly Leu
240 65 70 75 80
243 Ala Arg Pro Ser Ser Glu Ser Asp Met Met Thr Glu Tyr Val Val Thr
244 85 90 95
247 Arg Trp Tyr Arg Ala Pro Glu Leu Leu Leu Asn Ser Thr Asp Tyr Ser
248 100 105 110
251 Ala Ala Ile Asp Val Trp Ser Val Gly Cys Ile Phe Met Glu Leu Ile
252 115 120 125
255 Asn Arg Gln Pro Leu Phe Pro Gly Arg Asp His Met His Gln Met Arg
256 130 135 140
259 Leu Ile Thr Glu Val Ile Gly Thr Pro Thr Asp Asp Glu Leu Gly Phe
260 145 150 155 160
263 Ile Arg Asn Glu Asp Ala Arg Lys Tyr Met Arg His Leu Pro Gln Tyr
264 165 170 175
267 Pro Arg Arg Thr Phe Ala Ser Met Phe Pro Arg Val Gln Pro Ala Ala
268 180 185 190

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Input Set : **A:\MAPK5 (Supp).txt**
Output Set: **N:\CRF4\06022006\J768886A.raw**

271 Leu Asp Leu Ile Glu Arg Met Leu Thr Phe Asn Pro Leu Gln Arg Ile
272 195 200 205
275 Thr Val Glu Glu Ala Leu Asp His Pro Tyr Leu Glu Arg Leu His Asp
276 210 215 220
279 Ile Ala Asp Glu Pro Ile Cys Leu Glu Pro Phe Ser Phe Asp Phe Glu
280 225 230 235 240
283 Gln Lys Ala Leu Asn Glu Asp Gln Met Lys Gln Leu Ile Phe Asn Glu
284 245 250 255
287 Ala Ile Glu Met Asn Pro Asn Ile Arg Tyr
288 260 265
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292 <211> LENGTH: 26
293 <212> TYPE: DNA
294 <213> ORGANISM: Artificial
296 <220> FEATURE:
297 <223> OTHER INFORMATION: gene-specific primer containing restriction site
299 <400> SEQUENCE: 5
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303 <210> SEQ ID NO: 6
304 <211> LENGTH: 25
305 <212> TYPE: DNA
306 <213> ORGANISM: Artificial
308 <220> FEATURE:
309 <223> OTHER INFORMATION: gene-specific primer containing restriction site
311 <400> SEQUENCE: 6
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315 <210> SEQ ID NO: 7
316 <211> LENGTH: 20
317 <212> TYPE: DNA
318 <213> ORGANISM: Artificial
320 <220> FEATURE:
321 <223> OTHER INFORMATION: gene-specific primer containing restriction site
323 <400> SEQUENCE: 7
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327 <210> SEQ ID NO: 8
328 <211> LENGTH: 20
329 <212> TYPE: DNA
330 <213> ORGANISM: Artificial
332 <220> FEATURE:
333 <223> OTHER INFORMATION: gene-specific primer containing restriction site
335 <400> SEQUENCE: 8
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339 <210> SEQ ID NO: 9
340 <211> LENGTH: 368
341 <212> TYPE: PRT
342 <213> ORGANISM: Triticum aestivum
344 <400> SEQUENCE: 9
346 Met Asp Gly Ala Pro Val Ala Glu Phe Arg Pro Thr Met Thr His Gly
347 1 5 10 15

RAW SEQUENCE LISTING DATE: 06/02/2006
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Input Set : **A:\MAPK5 (Supp).txt**
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```
350 Gly Arg Phe Leu Leu Tyr Asn Ile Phe Gly Asn Gln Phe Glu Thr Thr
351             20                  25                  30
354 Ala Lys Tyr Gln Pro Pro Ile Met Pro Ile Gly Lys Gly Ala Tyr Gly
355         35                  40                  45
358 Ile Val Cys Ser Val Met Asn Phe Glu Thr Arg Glu Met Val Ala Ser
359     50                  55                  60
362 Lys Lys Ile Ala Asn Ala Phe Asp Asn Asn Met Asp Ala Lys Arg Thr
363 65                  70                  75                  80
366 Leu Arg Glu Ile Lys Leu Leu Leu Arg His Leu Asp Glu Asn Ile Val
367                 85                  90                  95
370 Gly Leu Arg Asp Val Ile Pro Pro Ala Ile Pro Gln Ser Glu Asn Asp
371             100                 105                 110
374 Val Tyr Ile Ala Thr Glu Leu Met Asp Thr Asp Leu His His Ile Ile
375         115                 120                 125
378 Arg Ser Asn Gly Glu Leu Ser Glu Glu His Glu Gln Tyr Phe Leu Tyr
379     130                 135                 140
382 Gln Leu Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Ile His
383 145                 150                 155                 160
386 Arg Asp Leu Lys Pro Ser Asn Leu Leu Leu Asn Ala Asn Cys Asp Leu
387                 165                 170                 175
390 Lys Ile Cys Asp Phe Gly Leu Ala Arg Pro Ser Ser Glu Ser Asp Met
391             180                 185                 190
394 Met Thr Glu Tyr Val Val Thr Arg Trp Tyr Arg Ala Pro Glu Leu Leu
395         195                 200                 205
398 Leu Asn Ser Thr Asp Tyr Ser Ala Asn Ile Asp Val Trp Ser Val Gly
399     210                 215                 220
402 Cys Ile Phe Met Glu Leu Ile Asn Arg Ala Pro Leu Phe Pro Gly Arg
403 225                 230                 235                 240
406 Asp His Met His Gln Met Arg Leu Ile Thr Glu Val Ile Gly Thr Pro
407                 245                 250                 255
410 Thr Asp Asp Asp Leu Gly Phe Ile Arg Asn Glu Asp Ala Arg Arg Tyr
411             260                 265                 270
414 Met Arg His Leu Pro Gln Phe Pro Arg Arg Ser Phe Pro Gly Phe Pro
415         275                 280                 285
418 Lys Val Gln Pro Ala Ala Leu Asp Leu Ile Glu Arg Met Leu Thr Phe
419     290                 295                 300
422 Asn Pro Leu Gln Arg Ile Thr Val Glu Glu Ala Leu Glu His Pro Tyr
423 305                 310                 315                 320
426 Leu Glu Arg Leu His Asp Val Ala Asp Glu Pro Ile Cys Thr Asp Pro
427                 325                 330                 335
430 Phe Ser Phe Asp Phe Glu Gln His Pro Leu Thr Glu Asp Gln Met Lys
431             340                 345                 350
434 Leu Ile Pro Glu Asn Glu Ala Leu Glu Leu Asn Pro Asn Phe Arg Tyr
435         355                 360                 365
438 <210> SEQ ID NO: 10
439 <211> LENGTH: 371
440 <212> TYPE: PRT
441 <213> ORGANISM: Nicotiana tabacum
443 <400> SEQUENCE: 10
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RAW SEQUENCE LISTING ERROR SUMMARY DATE: 06/02/2006
PATENT APPLICATION: **US/10/768,886A** TIME: 09:48:19

Input Set : **A:\MAPK5 (Supp).txt**
Output Set: **N:\CRF4\06022006\J768886A.raw**

Invalid <213> Response:
Use of "Artificial" only as "<213> Organism" response is incomplete, per 1.823(b) of New Sequence Rules. Valid response is Artificial Sequence.

Seq#:5,6,7,8

VERIFICATION SUMMARY DATE: 06/02/2006
PATENT APPLICATION: **US/10/768,886A** TIME: 09:48:19

Input Set : **A:\MAPK5 (Supp).txt**
Output Set: **N:\CRF4\06022006\J768886A.raw**

L:10 M:270 C: Current Application Number differs, Replaced Current Application Number